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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,553	12/14/2001	Masud Jenabi	46417.001012	6016

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EXAMINER	
ISSING, GREGORY C	

ART UNIT	PAPER NUMBER
3662	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/014,553	JENABI, MASUD	
	Examiner	Art Unit	
	Gregory C. Issing	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/4/04*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,22-32 and 34-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,22-32 and 34-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-10, 22-32, and 34-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fassett et al in view of Jacoom-Hood and Nathanson et al.

3. The rejection is set forth in the previous Office Action.

4. Applicant argues that Fassett et al fail to disclose an attenuator, fails to suggest using an attenuator to control scan angle, and using an attenuator to control polarization. Applicant alleges that Jacomb-Hood does not disclose using an attenuator to control scan angle or linear polarization, nor does it teach using the attenuator for anything other than its disclosed compensating for mismatching. Applicant does not argue the combination of Fassett et al and Jacomb-Hood but merely alleges that an attenuator for controlling the scan angle and polarization is not shown. This argument is not convincing since the applicant alleges that the attenuator of Jacomb-Hood does not suggest any other purpose than compensating for mismatching. However, that is all the instant specification teaches as well. The applicant has gone through great lengths to provide an enabling disclosure but alleging that the features of the attenuator would have been obvious to the skilled artisan. Thus, in the same fashion that the applicant's disclosure provides such to a skilled artisan so would such be enabling to a skilled artisan in light of Jacomb-Hood. Thus, the combination of Fassett et al with the teaching of providing an attenuator in the path as shown by Jacomb-Hood discloses the claimed use of an attenuator wherein the transmitter is capable of electronic steering and polarization control, see Figure 1 of Fassett et al. Applicant further alleges novelty in use of various dependent features which are disclosed in the applicant's specification as being known.

5. Claims 1-10, 22-32, and 34-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caille in view of Fassett et al and the Admission of Applicant's statement of prior art.

6. Caille teach a variable synthesized polarization active antenna comprising an electronically controlled scannable antenna beam that may be polarized to provide frequency reuse, which may

find application in multistatic radar and telecommunication antennas. A controllable phase shifter and controllable attenuator enable scanning of a shaped antenna beam. Both circular and linear polarization are suggested (col. 3, par. 1). A controllable attenuator is advantageously used to vary the gain of at least one of the power amplifiers. The T/R circuit comprises at least twoquassi-continuously controllable phase shifters and at least two quasi-controllable attenuators for synthesizing any linear, circular, or elliptical polarization (col. 5,par. 4). The controllable phase shifters and attenuators may be controlled in the analog or digital domain (col. 5, par. 6-7)The T/R circuits are implemented in MMIC technology. In one embodiment, the circuits 1 and 3 of Figure 3 may each comprise a controllable phase shifter and a controllable attenuator, which is coupled to a hybrid coupler 5a and hybrid coupler 5b (col. 9, par. 1-3). The circuit can synthesize any polarization and can easily switch between these possibilities provided that the attenuators and phase shifters can be controlled in a quasi-continuous fashion.

7. Fassett et al teach a conventional phase shifter polarization switch having multiple bits of resolution. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Caille by incorporating the teachings of Fassett et al by utilizing a desired number of multiple bits of phase shift and attenuation control when operating in the digital domain so as to provide the desired degree of resolution required for the particular use as would be kown to the skilled artisan. While Caille suggest the use of MMIC technology, the use of GaAs is not specified. The admitted prior art [0004] discloses the conventionality of GaAs as a substrate for chip design and thus its use would have been within the skill of the artisan. The dependent claims are shown and/or are obvious modifications of design of an antenna network having scanning capabilities as well as polarization diversity.

8. Applicant argues that Caille does not disclose the use of a phase shifter to control linear polarization and fails to disclose using an attenuator to control scan angle. Neither of these arguments are persuasive since Caille is directed to an electronically scannable antenna array

wherein the attenuatior and phase shifter are controlled so as to electronically scan the antenna beam as well as to switch among any of the various type of polarization. Applicant's argument that there is no teaching of using a phase shifter to control linear polarization is contrary to the teachings of Caille (see col. 9, par. 1, e.g.). Applicant's argument that there is no teaching of using the attenuator to control scan angle is likewise not convincing. Applicant addresses attenuator control of scan angle (Section 2) being readily deduced from the instant specification, by merely advancing well-known principles of antenna array beamforming using nothing from the instant specification and only information that is known to the skilled artisan. Thus, in light of the fact that a skilled artisan would be able to practice control of scan angle using amplitude values in the instant claimed subject matter, the skilled artisan would also be able to deduce the same from the disclosure of Caille. Since Caille clearly teaches varying the relative amplitude and phase differences between the orthogonally fed antenna inputs, each of scan control, linear polarization control, circular polarization control , and elliptical polarization control are taught. The applicant's argument that Fassett teaches away form Caille is not founded in principle and is therefore not persuasive; there is nothing in Caille or Fassett et al that teaches against any combination thereof. Fassett et al is cited for its teaching of providing variable bits of phase shift to provide the desired polarization control.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gould discloses a receiving circuit wherein variable gain amplifiers and/or attenuators are provided in each path of the antenna to maximize the signal to noise ratio. Fassett (3,665,480) discloses a multiple polarization antenna in Figure 11 wherein it is stated "(r)eferring now to FIG. 11, there is shown a means, partially in block diagram form, for supplying electromagnetic energy to the antenna 18 of FIG. 1 comprising a source of electromagnetic energy, such as x-band signal source 76, a variable attenuator 78 for attenuating the signal provided by source 76 and transferring the attenuated signal via coaxial cable 80 to coaxial cable adapter 32, and a well-known variable phase shifter 82 for phase shifting the signal provided by source 76 and transferring the

phase shifted signal to a second attenuator 84 which attenuates the phase shifted signal and transfers the attenuated phase shifted signal via coaxial cable 86 to coaxial cable adapter 34. By means of the two attenuators 78 and 84, a relative difference is provided in the amplitudes of the two signals applied, respectively, to the adapters 32 and 34. Thereby, two x-band signals differing in amplitude and phase, but having the same frequency, are applied to the antenna, one signal provided respectively for each feed element. By a well-known variation in the phase and amplitude, the polarization of radiation from the antenna can be made to vary from circular to elliptical to orthogonal linear polarizations."

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a)..

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is 703-306-4156. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory C. Issing
Primary Examiner
Art Unit 3662

gci